

**THE IDENTIFICATION, TREATMENT AND
REFERRAL OF HEALTH CARE NEEDS AMONG MEDICAID
CHILDREN DURING EPSDT SCREENING VISITS, 1989**

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I. INTRODUCTION

The Early Periodic Screening, Diagnosis and Treatment (EPSDT) Program was established in 1967 as the pediatric component of the Medicaid program. The goal of the program is to periodically screen Medicaid-enrolled children for correctable health problems throughout their development (up to 21 years of age) and, in turn, to provide appropriate treatment for any identified problems. As part of the HCFA contract *Acquisition and Analysis of State Medicaid Data* (known as the Tape-to-Tape project), we developed research files from the 1989 EPSDT screening files in four States -- California, Georgia, Michigan and Tennessee. This paper presents an analysis of the contents of these files as part of another HCFA contract: *Comparative Study of the Use of EPSDT and Other Preventive and Curative Health Care Services by Children Enrolled in Medicaid*. We present data on the rate at which providers identified health care needs, made referrals, and administered treatments during EPSDT screening visits.

We begin with a description of our methods for creating uniform files over the four States and a presentation of preliminary results. These results are followed by more detailed analysis of the health care needs data in Georgia and Michigan and a comparison of the prevalence of health care needs found in these screening files with those found in a national sample of preventive care visits made by Medicaid children and children not covered under Medicaid. Finally, we investigate the extent to which the health care needs of Medicaid children in Georgia and Michigan are met by providers during the EPSDT screening visit and the extent to which children are referred to other providers for further diagnosis and treatment.

II. THE DATA

In 1989, each of the four Tape-to-Tape States had special forms on which providers recorded information on the health status of children. The States subsequently entered the information into electronic files. From these files, we created uniform analytic databases. The databases for all four States contain a series of health care need or problem indicators.¹

¹ The California and Michigan screening files also contain a series of variables on patients' immunization status. These data are evaluated separately.

A. PROBLEM INDICATORS

In the screening visit files, each State documented whether there were any health care needs discovered in the course of the screening. Generally, these needs were identified by major body system. Although the delineation of body systems or problem areas was not uniform across States, there was sufficient information to allow us to establish the following 22 potential problem areas: behavior/social development/mental health; physical growth; chest/lung; heart/circulatory; blood; abdomen/digestive; urine/genitourinary; reproduction; skin/subcutaneous; musculoskeletal; oral health; nutrition; eye; ear; nose/sinus; throat; nervous system; congenital anomalies; environmental hazards; endocrine and metabolic disorders; genetic and chromosomal disorders; and other nonspecific problems.

The level of detail on health care needs in the screening files varies by State. Michigan has a series of variables for different body systems with a single set of codes identifying the status of care for potential problems -- tested, under care, referred, and required test not done. The other three States have two sets of variables. For California, the first set of variables indicates whether a problem is suspected from a particular screening procedure (e.g., developmental assessment, urinalysis, vision and hearing screens, etc.) and the second set of variables relates to follow-up for suspected problems -- no diagnosis or under care, questionable result/recheck scheduled, diagnosis made and treatment started, diagnosis pending, referred, and referral refused. For Georgia, the first set of variables identifies the body system of an identified health care need, and the second set indicates whether the condition was under treatment, treated by the screening provider, or referred. Tennessee's data are the most limited. A single variable indicates whether a referral occurred, and a subsequent set of variables lists the problem areas for which there were referable conditions by body system. There is no information in the Tennessee file on problem areas for which treatment was provided by the screening provider or for which the child was under the care of another provider.

In Table 1, we present an overview of how we recoded each State's data on health care needs into a uniform set of codes -- no problem and not referred, problem under care or treated, problem referred, and problem referred and treated.

B. NATIONAL COMPARISON DATA

To verify the data from the EPSDT screening files, as well as to compare the results for Medicaid children to other children in the United States, we reviewed national survey data. The 1991 National

TABLE 1

MAPPING OF STATE CODES TO UNIFORM PROBLEM INDICATOR CODES FOR THE EPSDT SCREENING VISIT RESEARCH FILES

Research File Values	California	Michigan	Georgia	Tennessee
	Two sets of codes—codes indicating whether a problem is suspected from a particular screening procedure and status codes for suspected problems	One set of codes for a set of problem indicators	Two sets of codes—codes for Indiciting the problem (including 01 for no abnormal condition or complaint) and status codes for the condition	Two sets of codes—an overall screen result code indicating whether a referral occurred (not condition specific) and codes identifying preferable conditions
1 - No Problem	<u>Problem Indicator</u> Blank 1 - No problem suspected	Blank 1 - Tested	<u>Problem Indicator</u> Blank 01 - No Abnormal Condition or Complaints, or <u>Problem Status</u> Blank 01-(N)Completed/Normal	<u>Referable Condition Indicator</u> Blank
2 - Treated or Under Care	<u>Problem Status</u> 1 - No Dx/Rx Indicated or Now Under Care 3 - Dx Made and Rx Started 4 - Dx Pending	2 - Under Care	<u>Problem Status</u> 2-(U)Under Treatment 3-(T)Treated by Screening Provider	
3 - Referred	<u>Problem Status</u> 5 - Referred 6 - Referral Refused	3 - Referred	<u>Problem Status</u> 4-(R)Referred	<u>Screen Result</u> 3 - Referred for Treatment

TABLE 1

MAPPING OF STATE CODES TO UNIFORM PROBLEM INDICATOR CODES FOR THE EPSDT SCREENING VISIT RESEARCH FILES

4 - Treated and Referred	Combination of Problem Status codes ¹	Combination of codes ¹	Combination of Problem Status Codes ¹	
9 - Other/ Unknown	<u>Problem Indicator</u> 2 - Refused, Contraindicated, Not Needed <u>Problem Status</u> 2 - Questionable result, Recheck Scheduled	O-Required Test Not Done	Partial screen for vision in which no treatment or referral was made	<u>Screen Result</u> 1 - Not Referred, No Referable Condition 2 - Not Referred, Other Reason

¹ This will occur when there is more than one variable on the raw state files providing information on problems in a particular system.

Ambulatory Medical Care Survey (NAMCS) is a visit-based file that includes data on the reason for visit, diagnoses of identified conditions, and source of payment. We used these data to compute the rate at which health care needs were identified for Medicaid and other children under 21 when they visited physicians for preventive care.

Three reason-for-visit variables are included in the file. We designated a visit as preventive care if any one of these three variables had a code for general examinations, special examinations, diagnostic tests, or other screening and preventive procedures, except family planning. Each visit record also contains up to three ICD-9-CM diagnosis codes. We recoded these variables to be consistent with the EPSDT problem categories. Finally, we separated Medicaid recipients from other children according to the source of payment variable.

III. PROBLEM IDENTIFICATION

A. PRELIMINARY RESULTS FROM EPSDT SCREENING VISITS: ALL FOUR STATES

For an initial glance at the data, we present the proportion of full EPSDT screening visits² with identified health care needs in Table 2. Health care needs include treatment, referral, or both. Referrals could have been made for identified or suspected problems, as well as for needed preventive care such as dental examinations. The data in this table have not been age or sex adjusted. Furthermore, some children may have had multiple screens, resulting in problems being counted more than once.

With those caveats in mind, the data show Georgia and Michigan to have very different results from California and Tennessee. Overall, the data indicate that 77 percent of the screening visits in Georgia and 85 percent of the screening visits in Michigan had at least one health care need treated and/or referred. In contrast, the treatment and/or referral rate was 29 percent in California and 23 percent in Tennessee. Oral health care needs account for much of the difference. Fifty percent of the Georgia screening visits and 63 percent of the Michigan screening visits included treatment and/or referral for dental care. The comparable numbers in California and Tennessee were 2 percent and 13 percent, respectively. The extremely low referral rate for dental services in California may be partly

² Partial screening visits for eye examinations found in the Georgia file are not included in this table. Subsequent tables that show the prevalence of problems among children do use information from these visits.

TABLE 2

PROPORTION OF EPSDT SCREENING VISITS¹ WITH HEALTH CARE NEEDS TREATED AND/OR
REFERRED BY PROBLEM TYPE
California, Georgia, Michigan and Tennessee, 1989

Problem Type	California	Georgia	Michigan	Tennessee
No. of EPSDT screening visits	754,590	106,534	111,762	104,248
Behavior/mental health	4%	2%	4%	<1%
Physical growth	1	5	8	1
Chest/lung	<1	2	1	1
Heart/circulatory	-	3	1	1
Blood	3	5	11	<1
Abdomen/digestive	-	1	-	<1
Urine	<1	3	-	1
Reproductive	<1	1	1	--
Skin/subcutaneous	-	3	4	2
Musculoskeletal	--	2	8	1
Teeth	2	50	63	13
Nutrition	-	24	-	<1
Eye	1	3	16	4
Ear	<1	3	13	4
Nose/sinus	-	1	3	<1
Throat	--	3	-	1
Nervous system	-	0	-	<1
Congenital anomalies	-	2	-	<1
Environment	<1	3	-	<1
Endocrine/metabolic	-	<1	-	<1
Genetic	<1	<1	<1	<1
Other non-specific	21	--	22	--
Overall physical	29	77	85	23

¹ Partial screening visits for eye examinations in Georgia are not included in these figures.

explained by the severe shortage of dental providers participating in the Medicaid program.³

Furthermore, Georgia and Michigan had the highest treatment and/or referral rates for all problem areas, except behavior/mental health (where California had the highest proportion). Tennessee's low rate is understandable because the data source only identified health care needs for which a referral was appropriate; visits that involved treatments alone may be omitted. For California, there were many problem areas with a code indicating that the screening procedure was refused, not indicated or not needed. Also, California had a high rate (21 percent) of health care needs that did not fit into our problem list. Because California and Tennessee data are incomplete, they are not included in the following more detailed discussions of EPSDT problem identification, treatments and referrals.

B. FURTHER ANALYSIS OF EPSDT SCREENING VISITS: GEORGIA AND MICHIGAN

In Table 3, we report the percentage of children in Georgia and Michigan for whom providers identified health care needs during an EPSDT visit in 1989 by age group, gender and race. By using children rather than screening visits as the unit of analysis, we avoid the potential for double counting. In addition, to make the data more comparable across the two States in these tables, we separate out oral health care needs from physical and mental health care needs. (The latter category is subsequently referred to simply as physical health care needs even though it includes behavior/social development/mental health care problems.)

Generally, the data show that more than half of all Medicaid children screened in Georgia and Michigan during 1989 had at least one health care need identified. Children in Michigan were somewhat more likely to have a physical health care need identified during an EPSDT screening visit than were children in Georgia (60 versus 54 percent). The only age group for which this is not the case is the one to two year olds. Across the age groups studied, there was little variation in the rate of health care needs in Michigan, except for adolescents for whom the prevalence of potential health problems was substantially higher than for younger children. In contrast, the rate of health care needs declined slightly with increasing age in Georgia. As a result, the greatest difference between the two States in the physical health care need identification rate is in the 13 to 20 year old age group: in Georgia, 49 percent were found to have physical health care needs while, in Michigan, 72 percent had identified

³ See Chapter 1: California in Ian Hill and Beth Zimmerman, *Evaluation of EPSDT Programs in the Tape-to-Tape States. Volume II: Case Study Reports*. Final report submitted to the Office of Research and Demonstrations, Health Care Financing Administration, Baltimore, MD, January 6, 1995.

TABLE 3

**PERCENTAGE OF CHILDREN WITH HEALTH CARE NEEDS
IDENTIFIED DURING EPSDT SCREENING VISITS BY AGE GROUP, GENDER AND RACE
Georgia and Michigan, 1989**

	Georgia		Michigan	
	Physical Health	Oral Health	Physical Health	Oral Health
All children with visits	54.0%	59.6%	60.3%	64.4%
Age Group				
Under 1 year	56.2	1.4	58.6	1.5
1-2 years	64.3	11.9	57.4	9.0
3-6 years	50.3	95.2	58.3	93.9
7-12 years	49.7	94.3	57.4	96.1
13-20 years	48.9	94.4	72.4	95.1
Gender				
Male	54.5	57.9	59.6	62.7
Female	53.6	61.2	60.9	66.0
Race				
White	57.5	60.2	61.1	60.6
African American	52.9	59.4	59.3	68.9
Other	42.8	55.1	58.4	69.8
Unknown	63.1	82.7	65.8	69.8

physical health care needs. In both States, nearly all children aged three years and older (94 to 96 percent) were either treated or referred for dental care.

In both States, there is no real difference between genders in the identification of physical health care needs. There is a slight difference for oral health care needs, however. EPSDT providers in both Michigan and Georgia were more likely to find oral health care needs among males than among females.

We also found differences in the rate of health care need identification between African American and white children in both States. In Georgia, white children were more likely to have physical health care needs identified, and in Michigan, African American children were more likely to have oral health care needs identified. The other race category, which includes Hispanics and Asians, had the lowest rate of both physical and oral health care needs in Georgia and the lowest rate of physical health care needs but the highest rate of oral health care needs in Michigan. Children of unknown race, who accounted for less than one percent of EPSDT participants in both States, had the highest rate of both physical and oral health care needs.

In Tables 4 and 5, we further disaggregate, by problem type and age group, the physical health care need rates of children with EPSDT screening visits during 1989 in Georgia and Michigan, respectively. In Georgia, nutritional problems were by far the most frequently identified health care need -- roughly 26 percent of all children were treated or referred for a potential problem related to nutrition. This was the most commonly identified health care need for all but the 13 to 20 year olds. Nutrition problems were followed by problems related to the skin (10 percent), the ear (9 percent), the chest or lung (7 percent) and physical growth (6 percent).

These top five conditions were the same for infants and one to two year olds; for three to six year olds, conditions related to the blood replaced physical growth problems. For seven to 12 year olds, eye problems replaced chest/lung problems, and for adolescents, problems related to reproduction replaced those related to nutrition. Generally, the conditions identified for each age group seem age-appropriate. The identification of problems related to physical growth decreased with age, problems related to behavior, the reproductive system and the eye increased with age, and problems related to the ear were concentrated in the one to two year old age group.

Between the two States, there are few similarities in the types of health care needs identified most frequently. Nutrition problems, the most frequently noted need in Georgia, were not separately identified in Michigan; these problems were included in the "other" category along with many other

TABLE 4

**PERCENTAGE OF CHILDREN WITH HEALTH CARE NEEDS
IDENTIFIED DURING EPSDT SCREENING VISITS BY PROBLEM TYPE AND AGE GROUP
Georgia, 1989**

	Under 1 Year	1-2 Years	3-6 Years	7-12 Years	13-20 Years	All Ages ¹
No. of children with EPSDT visits	17,839	18,701	22,997	18,423	12,916	90,432
Behavior/mental health	0.1%	0.6%	2.1%	3.1%	3.3%	1.8%
Physical growth	10.3	2.8	4.5	0.3	2.7	9.1
Chest/lung	12.8	12.5	0.9	3.0	1.7	7.2
Heart/circulatory	0.6	2.8	4.4	3.8	3.7	9.1
Blood	3.3	7.2	6.1	2.0	5.8	0.6
Abdomen/digestive	4.2	1.8	0.7	0.7	0.7	1.6
Urine	3.3	2.6	3.7	0.7	3.7	0.6
Reproductive	0.4	0.5	0.3	0.5	4.6	1.0
Skin/subcutaneous	17.1	11.5	6.7	6.2	6.6	9.5
Musculoskeletal	0.0	2.0	0.0	3.0	0.0	0.0
Eye	2.6	2.7	3.1	5.3	5.8	0.6
Ear	9.2	16.3	7.9	6.3	4.6	9.1
Nose/sinus	2.3	2.6	1.3	0.5	0.6	1.0
Throat	2.3	3.8	3.1	2.8	2.0	0.0
Nutrition	22.7	33.4	24.2	22.9	24.2	25.5
Other ²	0.5	0.8	0.6	0.8	1.2	0.8
Overall physical	56.2	64.3	50.3	50.0	48.9	54.0

¹ Six children with unknown ages are included in this column.² Includes endocrine and genetic problems.

TABLE 5

**PERCENTAGE OF CHILDREN WITH HEALTH CARE NEEDS
IDENTIFIED DURING EPSDT SCREENING VISITS BY PROBLEM TYPE AND AGE GROUP
Michigan, 1989**

	Under 1 Year	1-2 Years	3-6 Years	7-12 Years	13-20 Years	All Ages ¹
No. of children with EPSDT visits	17,808	19,480	30,066	24,149	17,847	109,355
Behavior/mental health	0.5%	1.4%	1.6%	<0.1%	<0.1%	0.8%
Physical growth	1.6	3.9	6.5	<0.1	<0.1	2.7
Chest/lung	7.3	7.2	6.7	6.5	9.2	7.3
Heart/circulatory	0.2	<0.1	0.3	0.7	1.7	2.5
Blood	13.1	10.6	11.9	8.5	11.0	11.6
Abdomen/digestive	0.2	2.1	1.7	1.5	5.8	2.5
Urine	0.2	3.9	1.5	3.7	5.8	2.5
Reproductive	6.5	3.9	2.5	2.5	7.6	4.2
Skin/subcutaneous	11.8	3.9	7.2	7.8	8.4	8.7
Musculoskeletal	10.5	8.6	6.5	7.3	9.5	8.3
Eye	3.2	2.7	16.8	22.9	36.6	16.6
Ear	10.3	17.5	16.8	11.0	10.6	13.6
Nose/sinus	8.1	10.6	6.5	6.5	5.0	7.9
Throat	--	--	--	--	--	--
Nutrition	--	--	--	--	--	--
Other ²	29.3	23.8	19.6	17.4	28.0	22.8
Overall physical	58.6	57.4	58.3	57.4	72.4	60.3

¹ Five children with unknown ages are included in this column.

² Includes nutrition, throat, nervous system, congenital anomalies, environmental, endocrine, genetic and other non-specific problems.

conditions. Thus, while the "other" category has the highest frequency among the problem areas, we do not know how many of the "other" problems were related to nutrition. The top five problem areas for all Michigan children with EPSDT visits in 1989 after the catch-all "other" category were those related to the eye (17 percent), the ear (14 percent), the blood (12 percent), the skin (9 percent) and the musculoskeletal system (8 percent).

There is little variation in top conditions among the different age groups in Michigan. For the three youngest age groups, problems related to the nose were among the five most frequently found problems; for the oldest age group, problems related to the chest and lung were among the top five. As in Georgia, the rate at which problems were related to the eye increased with age, and the diagnosis of ear problems was highest among one to two year olds. Other findings are less intuitive; for instance, reproductive problems generally did not increase with age and physical growth problems did not decrease with age, as one might expect.

C. COMPARISON WITH NATIONAL DATA

Table 6 shows problem identification rates from a national sample of preventive care visits made by Medicaid and other children in the United States. There was a lower rate of reported health care problems among the preventive care visits for Medicaid children in the 1991 NAMCS compared to Medicaid children in the 1989 EPSDT screening visit files for Georgia and Michigan. As previously described, EPSDT providers found health care needs for 54 percent of children in Georgia and 60 percent of children in Michigan. In the 1991 NAMCS, health care problems were identified for only 20 percent of preventive care visits made by Medicaid-enrolled children. Frequently identified problems common to both sources of data include those related to the ear, the skin, and the chest/lung.

The NAMCS data suggest that private, office-based physicians were less likely to identify health problems during a regular office visit in 1991 than were EPSDT providers in Georgia and Michigan in 1989. EPSDT providers in both States in 1989 were typically physicians and other practitioners working in local public health departments. Issues related to data comparability no doubt explain some of the difference. For example, during a general physical examination, a private physician may provide nutritional counseling for a child at risk for nutrition-related problems but may not record a diagnosis for a dietary problem on the child's chart. In such a case, we would not find a nutritional health care need on the NAMCS visit record. On the other hand, Georgia's provider manual for EPSDT screening visits requests providers to record any nutritional services provided, including WIC referral and dietary counseling. Thus, because of more rigorous documentation, we would pick up nutrition-related health

TABLE 6

PROPORTION OF PREVENTIVE CARE OFFICE VISITS WITH IDENTIFIED HEALTH CARE NEEDS
 BY MEDICAID STATUS AND PROBLEM TYPE
 National Ambulatory Medical Care Survey, 1991

Problem Type	Medicaid	Non-Medicaid
Number of visit records	302	883
Weighted number of visits	7,554,501	22,212,349
Behavior/mental health	1.1%	0.9%
Physical growth	0.7	0.4
Chest/lung	0.4	3.3
Heart/circulatory	0.7	1.5
Blood	0.6	1.0
Abdomen/digestive	0.4	1.8
Urine	0.4	1.0
Reproductive	1.6	1.7
Skin/subcutaneous	3.1	3.7
Musculoskeletal	—	0.5
Nutrition	—	1.8
Eye	0.4	3.3
Ear	0.4	3.2
Nose/sinus	0.7	1.7
Throat	1.4	1.2
Nervous system	—	0.5
Congenital anomalies	0.1	1.2
Environment	0.6	1.8
Endocrine/metabolic	0.2	1.8
Genetic	—	0.9
Other non-specific	3.5	3.4
Overall physical	20.3	29.9

care needs from the Georgia EPSDT screening record that we would not pick up from the NAMCS records. Furthermore, the greater comprehensiveness of EPSDT screening visits might lead to a higher rate of problem identification.

Comparing the NAMCS rates for Medicaid- and non-Medicaid-covered visits, we found that physicians were more likely to identify problems for non-Medicaid recipients than they were for Medicaid recipients (30 versus 20 percent). The top five health care needs identified for Medicaid children were those related to the ear, the skin, chest/lung, congenital anomalies, and the reproductive system. The same types of problems were most frequently identified for non-recipients of Medicaid, with the exception of congenital anomalies, which were not as prevalent. Instead, nose/sinus problems were among the five most commonly identified for this group.

IV. TREATMENT AND REFERRAL

The on-site provision of a broad range of medical and other health-related services is a desirable characteristic of any primary health care system. It is especially important, though, for delivery systems serving Medicaid recipients and other populations for whom transportation and appointment-related arrangements (e.g. time away from work or day care) are often a burden. For this reason, we are interested in the extent to which children with health care needs were treated during the EPSDT screening visits versus the extent to which they were referred to other providers for further diagnosis and treatment.

In Table 7, we show that for the most part, in both study States in 1989, treatment of health care needs during the screening visit was more common than referral. Two exceptions stand out: in Michigan, more referrals were made (rather than treatments rendered) for problems related to the blood, and in both States, more referrals were made for ear problems. In Georgia, there were slightly more referrals than treatments for heart/circulatory, urine, and throat problems but the differences were very small.

In general, during approximately 40 percent of the EPSDT screening visits made in the two study States in 1989, a child was treated for an identified physical problem. In one sixth of all visits in Georgia and one third of all visits in Michigan during 1989, children were referred to another provider for diagnosis and/or treatment of a potential physical problem. A child in Georgia was slightly more likely

TABLE 7

PERCENTAGE OF EPSDT SCREENING VISITS¹ WITH HEALTH CARE NEEDS
 THAT WERE TREATED AND/OR REFERRED BY PROBLEM TYPE
 Georgia and Michigan, 1989

	Georgia		Michigan	
Number of EPSDT screening visits	With Treatment	With Referral	With Treatment	With Referral
Behavior/mental health	1.0%	0.5%	0.5%	0.3%
Physical growth	4.5	1.1	1.3	1.3
Chest/lung	4.4	2.1	3.5	3.7
Heart/circulatory	4.4	1.8	6.2	1.3
Blood	4.5	0.5	4.6	6.8
Abdomen/digestive	1.0	0.4	2.0	6.8
Urine	1.0	2.0	0.9	1.5
Reproductive	4.5	0.8	2.0	1.8
Skin/subcutaneous	5.7	2.3	0.9	2.9
Musculoskeletal	4.4	0.0	4.6	3.7
Eye	6.8	2.3	6.6	7.8
Ear	3.1	0.0	6.2	7.6
Nose/sinus	0.7	0.6	4.9	2.9
Throat	4.4	1.8	—	—
Nutrition	23.3	0.6	—	—
Other ²	0.3	0.0	14.8	6.8
Overall physical	42.2	16.5	37.3	34.8
Oral health	18.5	33.0	47.8	15.3

¹ Partial screening visits for eye examinations in Georgia are not included in these figures.

² Includes endocrine and genetic problems in Georgia and nutrition, throat, nervous system, congenital anomalies, environmental, endocrine, genetic and other non-specific problems in Michigan.

to have a physical problem treated by the EPSDT screening provider compared to a child in Michigan (42 versus 37 percent). Conversely, a child in Michigan was significantly more likely to have been referred to another provider for further diagnosis and treatment of a physical problem compared to a child in Georgia (35 versus 17 percent).

The difference in referral rates for physical problems is partly due to a higher problem identification rate and a lower treatment rate in Michigan but may also be due to differences in the types of providers rendering screening visits, the integration of EPSDT providers with the rest of the medical community, and the service coverage of the States' Medicaid programs. In Michigan, local public health departments were virtually the only providers of EPSDT services through the late 1980s.⁴ These departments may not have the breadth of services required to treat all children's health care needs. While the EPSDT program was open to private providers in Georgia, local public health departments also dominated the provision of EPSDT screening services in that State. However, in our site visit to Georgia for this project, we found poor integration between the local health departments and other providers to be a significant problem.⁵ This poor integration could be keeping down the rate of referrals. Finally, Michigan covers many more auxiliary health care services, such as physical therapy, occupational therapy, services for speech, hearing and language disorders, and other rehabilitative services not covered under Georgia's Medicaid program in 1989.⁶ Therefore, we would expect referrals to providers of these services in Michigan and not in Georgia.

We find the reverse pattern between the two study States for dental care. Michigan children were more likely to receive dental treatment in 1989 from an EPSDT provider (48 versus 19 percent) while children from Georgia were more likely to be referred to another provider (33 versus 15 percent).

⁴ See Chapter 3: Michigan in Ian Hill and Beth Zimmerman, *Evaluation of EPSDT Programs in the Tape-to-Tape States. Volume II: Case Study Reports*. Final report submitted to the Office of Research and Demonstrations, Health Care Financing Administration, Baltimore, MD, January 6, 1995.

⁵ See Chapter 2: Georgia in Ian Hill and Beth Zimmerman, *Evaluation of EPSDT Programs in the Tape-to-Tape States. Volume II: Case Study Reports*. Final report submitted to the Office of Research and Demonstrations, Health Care Financing Administration, Baltimore, MD, January 6, 1995.

⁶ The 1989 Omnibus Budget Reconciliation Act requires States to cover any services available for federal matching that is needed to correct health problems discovered during EPSDT screening visits, regardless of whether the services are covered under the State's Medicaid plan. However, this law was not in effect during our data year.

The differences in the treatment and referral rates between the two study States in 1989 could also have been due to differing demographic compositions of the two Medicaid child populations. To investigate this, we broke out the percentages of EPSDT screening visits with treatment, referral, and both treatment and referral by age group, gender and race. These data are shown for Georgia and Michigan in Tables 8 and 9, respectively. Across all age groups, genders, and races, physical health care needs were more likely to be treated than referred in Georgia while, with the exception of infants, oral health care needs were more likely to be referred than treated. In Michigan, unlike Georgia, there were almost an equal number of visits with referrals alone as there were with treatments alone for physical health care needs and half again as many visits with both treatments and referrals. This is true across disaggregations by most age, gender and race categories.

The data in Tables 8 and 9 also allow us to determine whether any particular group of children were systematically treated and/or referred more often than other groups of children. In both States, referrals for physical health care needs were made more often among older children compared to infants and toddlers. Adolescents in Michigan were more likely to be both treated and referred for physical health care problems compared to younger children. Very few infants and toddlers were either treated or referred for dental care. Finally, whites were slightly more likely to receive treatment for physical problems compared to other races in both States. In Michigan, African Americans were more likely than other races to receive dental care.

V. CONCLUSION

Problems with data comparability across the four Tape-to-Tape States prevent us from making overall conclusions. However, we were able to compare the problem identification, treatment and referral rates in Georgia and Michigan. These data suggest that the EPSDT program is doing what it is supposed to do: EPSDT providers identified health care needs for more than half of the children screened in 1989, treated the majority of these problems during the screening visits, and referred children to other health care providers for further diagnosis and treatment when they could not manage the problem.

The problem identification rate appears very high compared to care delivered to the general population. When we compared EPSDT data to NAMCS data, we found problem identification was far less frequent in the NAMCS data for both Medicaid and non-Medicaid children who had preventive care

TABLE 8

PERCENTAGE OF EPSDT SCREENING VISITS¹ WITH HEALTH CARE NEEDS
 THAT WERE TREATED AND/OR REFERRED BY AGE GROUP, GENDER AND RACE
 Georgia, 1989

	Physical Health Care Needs			Oral Health Care Needs		
	With Treatment Alone	With Referral Alone	With Treatment and Referral	With Treatment Alone	With Referral Alone	With Treatment and Referral
All screening visits	35.8%	10.1%	6.5%	18.4%	32.9%	0.1%
Age Group						
Under 1 year	37.7	6.7	3.9	0.7	0.3	0.0
1-2 years	41.4	9.9	7.5	2.8	7.2	0.0
3-6 years	33.0	11.8	7.3	33.9	65.8	0.2
7-12 years	31.6	12.6	7.8	38.6	61.3	0.2
13-20 years	31.4	12.4	7.5	35.9	63.9	0.2
Gender						
Male	35.4	10.5	6.6	17.8	31.5	0.1
Female	36.0	9.7	6.3	19.0	34.2	0.1
Race						
White	38.2	10.3	7.6	20.5	32.9	0.1
African American	35.1	10.0	6.1	17.7	32.9	0.1
Other	27.1	10.2	5.4	17.9	33.7	0.0
Unknown	37.8	14.4	11.7	29.8	51.1	0.0

¹ Partial screening visits for eye examinations in Georgia are not included in these figures.

TABLE 9

PERCENTAGE OF EPSDT SCREENING VISITS WITH HEALTH CARE NEEDS
 THAT WERE TREATED AND/OR REFERRED BY AGE GROUP, GENDER AND RACE
 Michigan, 1989

	Physical Health Care Needs			Oral Health Care Needs		
	With Treatment	With Referral	With Treatment and Referral	With Treatment	With Referral	With Treatment and Referral
All screening visits	25.2%	22.6%	12.2%	47.8%	15.3%	0.0%
Age Group						
Under 1 year	27.2	21.2	9.4	1.4	0.1	0.0
1-2 years	24.9	21.8	9.8	7.1	1.8	0.0
3-6 years	21.4	24.8	12.0	69.4	24.4	0.0
7-12 years	24.4	21.8	11.2	74.1	22.1	0.0
13-20 years	30.5	22.6	19.3	72.7	22.4	0.0
Gender						
Male	25.0	22.4	11.8	46.4	15.0	0.0
Female	25.3	22.8	12.5	49.2	15.6	0.0
Race						
White	26.2	22.0	12.4	44.1	15.1	0.0
African American	24.1	23.2	11.8	53.3	14.5	0.0
Other	22.4	24.0	11.6	48.8	20.1	0.0
Unknown	26.4	23.1	15.9	45.0	23.4	0.0

office visits in 1991. Office-based physicians identified problems in only 20 percent of the visits. As we describe, this is likely due in part to different recording practices by the physician. NAMCS data also show that physicians were less likely to identify health problems for their Medicaid patients than they were for their non-Medicaid patients; the rate of problem identification among Medicaid-covered visits was only two thirds as high as those among visits not covered by Medicaid.

In general, the problems identified through EPSDT screens were more likely to be treated than referred. While EPSDT providers treated children for physical problems at almost the same rate in Georgia and Michigan, referral rates differed substantially across the two States; providers in Michigan made referrals about twice as often as providers in Georgia during 1989. In contrast, children in Georgia were two times more likely to be referred for dental care than were children in Michigan in 1989. These differences are due to resources available among the EPSDT providers and other community providers, as well as to state-specific Medicaid program characteristics.

The rate at which EPSDT providers should be providing diagnosis and treatment services versus the extent to which they should refer children to other providers to achieve appropriate levels of participation in the health care system and efficient use of resources is unknown. A recent article cited the need among the general population for referral to secondary care for short-term consultation or to tertiary care specialists for unusual problems as in the range of 15 to 25 percent.⁷ Whether this rate should be higher or lower for a low-income child population receiving regular screening and preventive care services is not clear. Further study is needed.

⁷ Barbara Starfield, Is primary care essential? *The Lancet* 344 (October 22, 1994):1129-1133.

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